

# **Pharmacognosy (1)**

**PHG 202**

**Fall 2017 - 2018**

**Lecture (2)**

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# *General Characters of Flowers belonging to Family Compositae (Asteraceae)*

## I- Macroscopical characters:

1. **Shape (inflorescence):** capitulum (flower-head).
2. **Receptacle:** hollow or solid with concave surface.
3. **Involucre:** 2-3 whorls of bracts.
4. **Florets:** small & sessile flowers inserted on receptacle:
  - ✓ **Disc florets:** the central type.
  - ✓ **Ray florets:** the marginal type.
  - ✓ **Paleae:** scaly leaves arising from the axils of the florets.



## II- Microscopical characters:

1. **Spiny pollen grains:** spherical in shape, showing 3 germ pores, 3 germinal furrows and having a spiny exine.
2. **Compositous glandular hairs:** glandular hairs formed of multicellular biseriate head & bicellular biseriate stalk.



# German Chamomile

البابونج الألماني

# German Chamomile

## Botanical origin:

- The dried flower heads of Matricaria chamomilla, Family: Compositae (Asteraceae).
- The name “*Matricaria chamomilla*” is derived from:
  - ✓ The word “Matricaria” means Matrix or Womb or Uterus due to the wide use of the plant in treatment of womb diseases.
  - ✓ The word “chamomilla” means apple on the ground (earth apple) where the plant grows near the ground and characterized by its apple-like odor.



Disc florets

Ray florets

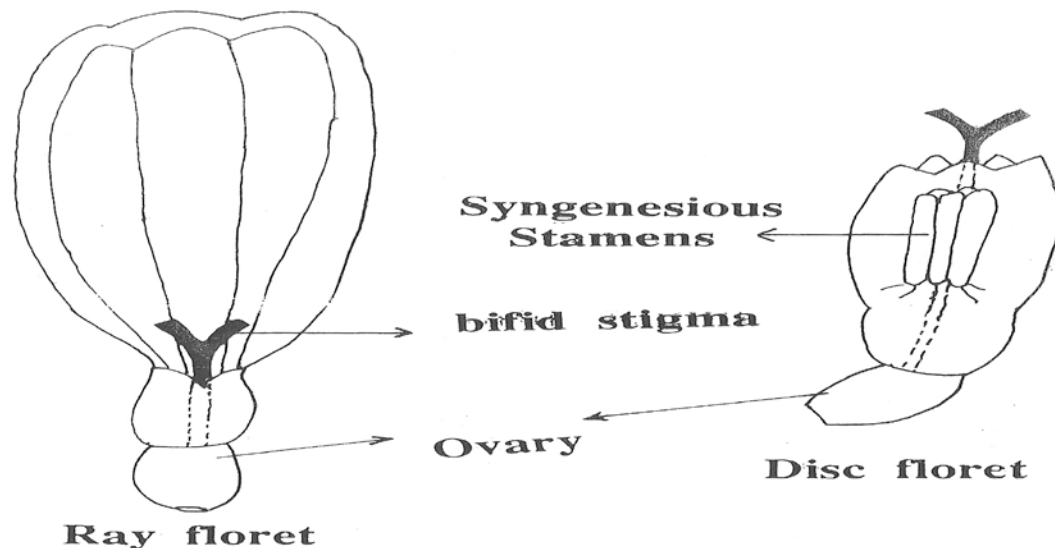
# German Chamomile

## Macroscopical characters:

Item	Ray florets	Disc florets
<u>Shape:</u>	Single capitulum, composed of <u>few ray florets</u> and <u>numerous disc florets</u> , carried on <u>hollow receptacle</u> , surrounded by <u>involucre</u> & <u>devoid of paleae</u> .	
<u>Kind:</u>	Unisexual - Pistillate.	Hermaphrodite.
	Epigenous.	
	Irregular – Zygomorphic.	Actinomorphic.
<u>Perianth:</u>	Homochlamydeous – Petaloid.	
<u>Tepals:</u>	White in color.	Yellow in color.
	Symtepalous with 3 obtuse teeth.	Symtepalous with 5 acute teeth.

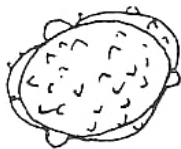
# German Chamomile

Item	Ray florets	Disc florets
<u>Androecium</u> (Stamens):	Absent	<ul style="list-style-type: none"> <li>• Polyandrous androecium.</li> <li>• Syngenesious stamens.</li> <li>• Heterostaming stamens.</li> <li>• Basifixed attachment.</li> </ul>
<u>Gynaecium</u> (Carpels):	<ul style="list-style-type: none"> <li>• Bicarpellary gynaecium.</li> <li>• Syncarpous gynaecium.</li> <li>• Inferior ovary.</li> <li>• Basal placentation.</li> <li>• <u>Bifid stigma</u>.</li> </ul>	



# German Chamomile

## Microscopical Characters:



Spiny pollen  
grain



Compositous  
glandular hair

## Active constituents & their preparations:

### 1. Volatile oils:

- Sesquiterpenes ( $\alpha$ -bisabolol , matricin & matricarin).
- When prepared by solvent extraction: yellowish green colored oil due to matricin.
- When prepared by steam distillation: matricin → chamazulene → blue colored oil.
- Matricarin is a bitter principle.

### 2. Flavonoids:

- Apigenin, Luteolin & Quercetin derivatives.
- Prepared by aqueous and/or hydro-alcoholic extraction.

# German Chamomile

## 3. Coumarins:

- Umbelliferone.
- Prepared by aqueous and/or hydro-alcoholic extraction.

## Confirmatory tests:

**Test for volatile oil:** Steam distillation → blue colored oil.

**Test for flavonoids:** Extract + KOH → yellow color.

## Internal Uses:

### 1. Treatment of GIT disorders:

- Flatulence:** Carminative effect of V.O. & Flavonoids.
- Dyspepsia (Indigestion):** Digestive effect of V.O. & Flavonoids.
- Colics (Gripping):** Antispasmodic effect of V.O. & Flavonoids.
- Anorexia (Loss of Appetite):** Bitter stomachic (Appetite stimulation) effect of V.O. (Matricarin) .



# German Chamomile

## 2. Treatment of RT disorders:

- a) Bronchitis: Anti-inflammatory effect of Flavonoids.
- b) Asthma: Bronchodilator effect of V.O.

## 3. Treatment of Circulatory disorders:

Blood Clots: Anticoagulant effect of Coumarins.

## 4. Treatment of Bacterial infections:

Common cold: Anti-bacterial effect of Flavonoids.

## 5. Treatment of CNS disorders:

Anxiety & Insomnia: Sedative effect of Flavonoids.

## Topical Uses:

### Treatment of Skin disorders:

Skin inflammations & ulcers: Anti-inflammatory effect of V.O. & Flavonoids.

# Roman Chamomile

البابونج الروماني

# Roman Chamomile

## Botanical origin:

- The dried flower heads of Anthemis nobilis, Family: Compositae (Asteraceae).
- The name “*Anthemis nobilis*” is derived from:
  - ✓ The word “Anthemis” due to the anthemic acid content.

## Shape:

- Each capitulum is double, composed of numerous ray florets and few disc florets, carried on solid receptacle, surrounded by involucre and florets raised from paleae.

## Active constituents:

### 1. Volatile oils:

- Sesquiterpenes ( $\alpha$ -bisabolol & chamazulene).
- Naturally blue colored oil due to presence of chamazulene.

### 2. Flavonoids:

- Apigenin, Luteolin & Quercetin derivatives.

# Roman Chamomile

## 3. Coumarins:

- Scopoletin.

## 4. Esters:

- Anthemnic acid (Bitter principle).

## Uses:

Similar to German chamomile but with:

- Greater Bitter stomachic effect due to anthemnic acid.
- Lesser Topical effects due to smaller amounts of V.O. & Flavonoids.